ASSIGNMENT 4

Textbook Assignment: "Electrical Distribution," chapter 4, pages 4-33 through 4-37, "Interior Wiring," chapter 5, and "Fiber Optics and Lighting," chapter 6, pages 6-1 through 6-8.

4-1. An ammeter has which of the following electrical characteristics?

1. High internal resistance
2. High power consumption
3. Low internal resistance
4. Low voltage rating

4-2. When an ammeter is connected across a voltage source, which of the following conditions will occur?

1. The circuit will be overloaded
2. The circuit will consume excessive power
3. The ammeter will be damaged
4. The ammeter will read the current in the reverse direction

4-3. Before breaking a circuit connection for an ammeter, what should be your first step?

1. Set the meter at its highest range
2. Energize the circuit
3. De-energize the circuit
4. Set the meter at its lowest range

4-4. When taking measurements on a direct-current circuit you should connect the ammeter to the correct polarity.

1. True
2. False

4-5. Before connecting an ohmmeter into a circuit, what step should you do first?

1. Place the meter to its highest range
2. Check the polarity of the meter
3. Make sure current is in the circuit
4. Make sure there is no voltage in the circuit

4-6. Before placing the test leads of an ohmmeter into the terminals of a capacitor, what step should you do first?

1. Ground the case of the capacitor
2. Charge the capacitor
3. Discharge the capacitor
4. Ground the ohmmeter

4-7. You should not use a low-voltage megger to test high-voltage insulation breakdown for which of the following reasons?

1. The megger will be damaged
2. The megger will not read accurately
3. The insulation will be damaged
4. The megger will not indicate any reading

4-8. To dry a wet digital multimeter, you should use low-pressure clean air at what maximum pounds per square inch (psi)?

1. 10
2. 20
3. 25
4. 30

4-9. Cross-modulation interference is caused by which of the following conditions?

1, Ionized air in the vicinity of power lines
2. Localized excessive voltage stress
3. Corroded connections in distribution lines
4. Cracked power line insulation

4-10. Spark-discharge interference is caused by which of the following conditions?

1. Ionized air in the vicinity of power lines
2. Corroded connection in distribution lines
3. Cracked power line insulation
4. Both 2 and 3 above

4-11. When working on distribution lines, what action should you take to protect your high-voltage rubber gloves?

1. Wear cotton gloves over them
2. Avoid handling sharp objects
3. Wear leather gloves over them
4. Use them only on de-energized circuits

4-12. How often should rubber gloves be given an air test?

1. Yearly
2. Monthly
3. Weekly
4. Each day, before using the glove

4-13. What action should you take to protect rubber gloves from mechanical damage?

1. Leave the rubber gloves inside the cotton gloves
2. Leave the rubber gloves inside the leather gloves
3. Store the gloves inside a canvas bag
4. Store the gloves in dry storage

4-14. Besides mechanical damage, rubber gloves should be protected from which of the following conditions?

1. Moisture
2. Dryness
3. Sunlight
4. Chemical exposures

4-15. A rubber insulating insulator hood is used to cover what distribution system component?

1. Bare conductor
2. Suspension insulator
3. Strain insulator
4. Post insulator

4-16. If a direct burial cable is installed underneath a four-inch concrete slab, it should be buried at what minimum depth?

1. 6 inches
2. 18 inches
3. 24 inches
4. 30 inches

4-17. If a direct burial cable is installed underground without covering, it should be buried at what minimum depth?

1. 6 inches
2. 12 inches
3. 18 inches
4. 24 inches

4-18. Type UF cable can be used in what location?

1. A service entrance
2. Embedded in concrete
3. A wet location
4. In a storage-battery room

4-19. An electrical wiring system installed in an underfloor raceway should have what maximum voltage?

1. 110 V
2. 220 V
3. 440 V
4. 600 V

4-20. Underfloor raceway ducts should be filled with conductors up to what maximum percentage of its cross sectional area?

1. 90%
2. 80%
3. 50%
4. 40%

4-21. For general installation, underfloor raceways should be installed at least how many inch(es) below the surface of a floor?

1. 1 inch
2. 2 inches
3. l/2 inch
4. 3/4 inch

4-22. If an interior wiring system is not installed underground, where is the starting point located?

1. At the service entrance
2. At the watt-hour meter
3. At the panel board
4. At the service drop

4-23. Power feeders should never be suspended less than what minimum distance above a walkway?

1. 10 feet
2. 12 feet
3. 18 feet
4. 20 feet

4-24. Communications circuits should be installed in what enclosure?

1. In the same enclosure with light circuits
2. In the same enclosure with power circuits
3. In an enclosure all by itself

4-25. Conductors installed in raceways that are No. 8 AWG or larger should be configured in which of the following ways?

1. Solid
2. Stranded
3. Securely fastened to the raceway
4. Grounded to the raceway

4-26. If an overcurrent device or circuit breaker is located in a panel board and rated at 80 amperes, it should have a load that does not exceed how many amperes?

1. 60
2. 64
3. 80
4. 100

4-27. The insulation of an equipment-grounding conductor should have what outer color?

1. White
2. Green with yellow stripes
3. Gray
4. Gray with yellow stripes

4-28. You have a conductor with black insulation that you want to use as an equipment ground conductor. What should you do with the wire before installing it?

1. Put a yellow stripe on the insulation
2. Color the exposed insulation white
3. Mark the exposed insulation with gray tape
4. Strip the insulation from the entire exposed length of the wire

IN ANSWERING QUESTIONS 4-29 AND 4-30, REFER TO TABLE 5-2 IN CHAPTER 5.

4-29. When a No. 2 AWG copper wire is installed vertically in a multistory building, it should be supported at what intervals?

1. Every 200 feet
2. Every 180 feet
3. Every 100 feet
4. Every story

4-30. When a No. 6 copper conductor is installed vertically in a multistory building and supported by the deflection method, it should be supported at what intervals?

1. Every 100 feet
2. Every 200 feet
3. Every 50 feet
4. Every 20 feet

4-31. An electrical circuit can be tested safely and inexpensively using which of the following test equipment?

1. Digital multimeter
2. Line-voltage tester
3. Light bulb tester
4. Neon tester

4-32. When you use a power bender, what procedures should you follow?

1. The same procedures as manual benders
2. The procedures recommended by the conduit manufacturer
3. The procedures recommended by the bender manufacturer
4. The same procedures as any other power bender

IN ANSWERING QUESTION 4-33, REFER TO TABLE 5-3 IN CHAPTER 5.

4-33. When bending with power benders and the manufacturer's chart is not available, what should be the minimum stub length of a 1 -inch conduit?

1. 1 7/8 inches
2. 2 3/8 inches
3. 10 inches
4. 13 inches

4-34. Before turning the motor of a power bender to bend a conduit, what safety check should you make?

1. Make sure the power is on
2. Make sure that the bender is perfectly leveled to the floor
3. Make sure the lock pins are properly engaged
4. Make sure the conduit is g-rounded

4-35. A conduit run from one outlet to the next should only have what maximum number of bends?

1. Seven
2. Six
3. Five
4. Four

4-36. Wooden plugs should never be used as anchors for which of the following reasons?

1. They cure in a short time
2. They might stain the wall
3. They eventually loosen in the hole
4. Each of the above

IN ANSWERING QUESTION 4-37, REFER TO TABLE 5-4 IN CHAPTER 5.

4-37. You are installing two l/2 inch conduit runs parallel to each other. What is the proper spacing between the conduits?

1. 1 5/8 inches
2. 7/8 inch
3. 5/8 inch
4. 25/32 inch

IN ANSWERING QUESTION 4-38, REFER TO TABLE 5-5 IN CHAPTER 5.

4-38. A 1 1/2-inch rigid conduit installed in a straight run should be supported at what maximum interval?

1. 10 feet
2. 12 feet
3. 14 feet
4. 16 feet

4-39. Which of the following wire splices is simple to make?

1. Western Union
2. T-tap
3. Portable chord splice
4. Pigtail

4-40. Which of the following wire splices is the most difficult to make?

1. Western Union
2. T-tap
3. Portable chord splice
4. Pig tail

4-41. When soldering wires, you should not leave the unsoldered splice exposed to the air for a long period of time for which of the following reasons?

1. The exposed splice will oxidize
2. The exposed wire will collect dirt
3. The exposed splice will collect moisture
4. All of the above

4-42. What means should you use to cool a soldered splice?

1. Dip it in water
2. Blow on it
3. Allow it to cool naturally
4. Apply a damp rag to it

4-43. Which of the following tools should you use to remove a fuse from a switch box?

1. Electrician’s pliers
2. Needle nose pliers
3. Fuse puller
4. Each of the above

4-44. Which of the following methods should you use to replace a fuse?

1. Install the fuse first into the line side of the fuse clip, then into the load side
2. Install the fuse into the load side and line side fuse clips at the same time
3. Install the fuse first into the load side of the fuse clip, then into the line side
4. Each of the above

4-45. Which of the following statements is correct about the use of portable electric tools?

1. Make sure all tools you use have a third plug
2. Make sure all tools are double insulated
3. Make sure all tools are grounded
4. Make sure you use GFCI on any tool

IN ANSWERING QUESTIONS 4-46 AND 4-47, REFER TO TABLE 5-6 IN CHAPTER 5.

4-46. What OSHA safety color code is used to indicate a cutting device?

1. Purple
2. Orange
3. Yellow
4. Red

4-47. What OSHA safety color code is used to designate emergency stop switches?

1. Orange
2. Yellow
3. Red
4. Green

4-48. What is the very first thing you should do when you discover a fire in your work place?

1. Make a reasonable effort to put out the fire
2. Call the fire department
3. Pull the fire alarm and alert all workers in the work place
4. Contact your immediate supervisor

4-49. A fire in an electric motor is designated as what type of fire?

1. Class A
2. Class B
3. Class C
4. Class D

4-50. Fire in a paint locker should be extinguished with what which of the following agents?

1. Water
2. Carbon dioxide
3. Dry chemicals
4. Both 2 and 3 above

4-51. The best extinguishing agent for electrical fires is water.

1. True
2. False

4-52. What fiber-optic device converts electrical signals to optical signals?

1. Transducer
2. Converter
3. Transmitter
4. Inverter

4-53. What fiber-optic transmitter component receives incoming electrical signals?

1. Receiver
2. Source drive circuit
3. Coupler
4. Interface circuit

4-54. What is the difference between a semiconductor LED and an LD?

1. An LED emits coherent light while an LD does not
2. An LED has a fixed-phase relationship while an LD lacks this relationship
3. An LED is more economical to operate than an LD
4. An LED is more expensive to operate than an LD

4-55. Semiconductor lasers emit light at a spread of what angle?

1. 2 to 4 degrees
2. 5 to 7 degrees
3. 10 to 15 degrees
4. 16 to 20 degrees

4-56. Which of the following is the most common material used to produce a semiconductor?

1. Silicon
2. Indium
3. Aluminum
4. Phosphorus

4-57. Light from a laser is produced through what process?

1. Spontaneous emission
2. Simulated emission
3. Simultaneous emission
4. Stimulated emission

4-58. Which of the following statements is correct concerning electric energy in the operation of an LED and an LD?

1. All electrical energy is converted to optical energy
2. A small amount of electrical energy is converted to heat energy
3. A substantial amount of electrical energy is converted to optical energy
4. A substantial amount of electrical energy is converted to heat energy

4-59. What component is used to more efficiently couple light from a light source to an optical connector?

1. Optical pigtail
2. Coupler
3. Lens
4. Transducer

4-60. Which of the following fiber-optic components converts the weakened and distorted optical signal back into an electrical signal?

1. Transmitter
2. Amplifier
3. Receiver
4. Coupler

4-61. Which of the following is the purpose of an optical detector?

1. To generate an optical pulse proportional to the input current
2. To convert an optical signal into an electrical signal
3. To convert an electrical signal into an optical signal
4. To amplify the optical output signal

4-62. What type of fiber-optic link consists of two simple point-to-point links transmitting in opposite directions?

1. Simplex
2. Composite
3. Full duplex
4. Opposite

4-63. What instrument is recommended for taking field measurements on an installed optical fiber cable that is 100 feet long?

1. Optical loss test reflectometer
2. Digital multimeter
3. Optical time domain reflectometer
4. Optical time domain refractometer

4-64. What fiber-optic cable splice is considered a permanent splice?

1. Adhesive splice
2. Mechanical splice
3. Welded splice

4-65. In a V-groove splice, what material or component completes the assembly process by bonding the ends of the fiber-optic cable?

1. The substrate
2. The flat spring
3. The transparent adhesive
4. The alignment sleeve

4-66. Which of the following techniques is the most popular technique used for fusion splicing?

1. Carbon-dioxide-laser fusion
2. Nichrome-wire fusion
3. Electric-arc fusion
4. Gas-flame fusion

4-67. What was the first heating element used for fusion splicing?

1. Gas flame
2. Chrome wire
3. Carbon-dioxide laser
4. Nichrome wire